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13. ABSTRACT (Maximum 200 words) U.S. Navy women aboard 24 ships and at 39 shore stations were surveyed to determine their perceptions of their health, health care facilities, health care providers, and patient-health care provider interactions. The women also reported their level of satisfaction with health care, medical care providers, and medical care facilities. The results indicate that the majority of women are satisfied with their health care while a minority indicated they are not satisfied with the health care they received at sick call. Health care utilization, in terms of the number of sick-call visits and the number of prescriptions received, among women serving aboard ships was similar to that for women at shore stations. Although women aboard ships reported significantly higher levels of distress (anxiety, depression, and loss of behavioral control), the clinical significance of this finding is unknown. Finally, in this sample the women aboard ships tended not to be as satisfied with their overall health care or with their health care providers as women at shore stations. Although the multivariate test was not significant ($p=.064$), it is recommended that the hypothesis that women aboard ships are dissatisfied not be rejected before additional data are collected and analyzed.					
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Foreword

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Introduction

Currently, the U.S. Navy has about 9,000 women assigned to ships and 46,000 assigned to shore stations. Career opportunities for these Navy women have been expanded during the past decade to include service aboard a variety of noncombatant, and more recently, combatant ships. For example, 415 Navy women were aboard the aircraft carrier Dwight D. Eisenhower when it deployed for 6 months to the Mediterranean and Adriatic Seas in 1995. Overall, women now serve on 27 combatant and 69 noncombatant ships or 26% of the Navy's 367 ships. However, women constitute a relatively small percentage (about 14%) of personnel aboard ships. Thus, women serving aboard ships are members of an obvious minority work group and can be expected to have elevated levels of stress, performance pressures, and work-related problems.^{1,2} Taken together, women aboard ships are engaged in nontraditional occupations within a unique work environment where they are subject to stressors that reasonably can be expected to result in increased feelings of distress. These feelings of distress may cause an increase in psychological and physical symptoms of illness among women aboard ships.³⁻⁶

Feelings of distress have been shown to detrimentally affect women's health.³⁻⁵ Sorensen and Verbrugge⁵ defined distress as negative feelings that are the result of subjective responses to environmental conditions. Mechanic,³

in a review of studies that investigated the effect of psychological distress on illness behavior, found that gender and level of distress were the most powerful predictors of help-seeking at medical care facilities. Distress not only contributes to bodily symptoms but also affects the way people perceive their physical health status and their use of medical care facilities.^{3,5} For example, Repetti⁴ found that subjective well-being and the behavioral adjustments that accompany short-term increases in job stressors are positively related. She stated that feelings of psychological and physical well-being (distress) are negatively affected by increases in job stress. Distress also has been found to be negatively correlated with patients' adherence to treatment.⁷ In summary, the results of these studies suggest that service aboard ships may place women at an increased risk of developing negative symptomatology associated with illness.

Numerous studies have found that women, in general, suffer from a higher incidence and prevalence of physical illness than do men.⁸ Similar results have been found for Navy women serving aboard ships.⁹ The consequences of women's higher morbidity is expressed in a larger number of disability days, health care facility visits, and prescription and over-the counter drug use.^{8,10-13}

Verbrugge¹² attributed women's poorer health profiles to their multiple roles, stress, and health attitudes. She outlined five mutually exclusive factors that have been used to explain sex differences in health: (1) biological risks: different genes and hormones; (2) acquired risks: different social activities, work environments, leisure activities, health habits, and psychological stressors; (3) psychosocial aspects of symptoms and care: different perceptions of symptoms, symptom seriousness, and abilities to initiate positive action; (4) health reporting behavior: different manner of speaking to others about their symptoms; and (5) history of health care and caregivers: how medical decisions decided upon by individuals affect the course of diseases and the beginning of new diseases. The first factor is not practically amenable to change; however, each of the other factors is related to patients' and caregivers' perceptions and behaviors and may be susceptible to positive change.

Levy¹⁴ and coworkers documented a relationship between women's perception of the health care they received and their physical well-being. Women's perception of their health is also an important factor contributing to the use of health care services, regardless of their actual physical health.^{15,16} Connelly et al.¹⁵ found that 21% of patients have health perceptions lower than expected for their levels of physical health. Low health perceptions have been associated with increased emotional distress and higher utilization of health

care resources. Therefore, women may use health care facilities at a higher rate because they more accurately perceive and rate their symptoms and respond by seeking appropriate health care. However, a consequence of this gender difference in ability to perceive and report symptoms may lead to overestimates of gender differences in morbidity.¹⁷

Navy health care facilities may be staffed by any combination of, or solely by, an independent duty corpsman (similar to a nurse or physician's assistant), a physician's assistant, or a physician.¹⁸ These medical care providers have varying degrees of training, education, and experience. Ample evidence suggests that these staffing factors cause female patients to be distressed when engaged in consultations with their health care providers. For example, Hardin and Hailey,⁶ in a study of health care professionals' perceptions of female patient's psychological distress, stated that health care professionals often do not accurately gauge women's need for care and therefore should be trained to recognize psychological distress, and appropriately refer seriously ill women.

Overall, womens' perceptions of treatment, responsiveness to treatment, and level of physical distress have been shown to be affected by physicians' style and the quality of the physician-patient relationship.^{19,20} Physicians' attributes, practice characteristics, and practice style have also been shown to have an affect on adherence to treatment regimens.⁷ Further research is needed

to determine the factors that influence physician-patient interactions and to define the type of patients, illnesses, and settings in which the benefits of modified interactions may be realized.

Patient's level of satisfaction with general health care services and health care providers has important implications for evaluating quality of care and identifying actions to improve service. Additionally, satisfaction with health care has been associated with the patient's willingness to seek medical care, comply with medical regimens, and to continue a relationship with a health care organization.^{21,22} Patient satisfaction with health care services and health care providers has been explored in a few studies. For instance, Doyle and Ware²³ found that physician conduct accounted for 41% of the variance in general satisfaction ratings of provided health care. Larsen and Rootman²¹ found that patient's satisfaction with health care services was directly related to the degree that the physician's performance met the patient's expectations. While Ware, Davies-Avery, and Stewart²⁴ found that patients' education level, occupation, and income, as well as age, were related to their satisfaction with health care and health care providers. However, Ware et al.²⁴ did not find a relationship between health care satisfaction and patients' marital status, race, or social class.

Brody et al.,²⁵ in a study of patient's perceptions of the treatment they desired as opposed to the treatment they received, discovered patients were more satisfied with treatment that involved education, stress reduction, or negotiation (discussing ideas about how to manage the patient's medical problem) when compared to patients who had not received one of these interventions. Technical interventions, such as examinations, tests, medications, and nondrug therapy, were not related to patient satisfaction. In summary, Brody et al.²⁵ stated: (a) patients' perceptions about their involvement in care was related to their attitudes about their illnesses as well as to their recovery, and (b) their perceptions about nontechnical interventions were better predictors of their satisfaction than was perception about technical intervention.

The primary goal of the present study was to compare the health care perceptions of U.S. Navy women stationed aboard ships with those of women at shore stations. Specifically, comparisons were performed between the groups for self-reported levels of satisfaction with health care, perceptions of their current general health, health worry and concern, perceptions of prior health and health outlook, and levels of anxiety, depression, and loss of self-control. The following a priori hypotheses were tested; women serving aboard ships would: (1) be less satisfied with provided health care, (2) describe their health less favorably, (3) report greater levels of health worry and concern, (4)

perceive their prior health and health outlook to be poorer; and (5) report greater levels of negative psychological symptomatology than women serving at shore stations.

Method

Participants

Data were collected from U.S. Navy women and men (both enlisted and officer patients and health care providers) serving aboard 21 combatant and noncombatant ships. However, the sample of female officers and health care providers is too small to allow for a valid analysis at this time. Therefore, only data collected from enlisted female patients will be included in this report. Data for the present study were completed and returned by 357 women (enlisted patients). The overall response rate for women aboard ships was 53.5%.

Shore station participants represented a wide range of geographic regions and small and large commands. Only data collected from female enlisted women patients will be included in this report. The questionnaire for the shore station participants was completed and returned by 560 enlisted women and the response rate was 42.3%. The demographic characteristics of women aboard ships and at shore stations are shown in Table 1.

Table 1**Demographic Characteristics of Women Aboard Ships and at Shore Stations**

<u>Characteristic</u>	<u>Aboard Ships</u>			<u>Shore Stations</u>		
	<u>Mean</u>	<u>SD</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>	<u>N</u>
Age (Years)	26.0	5.9	352	26.4	6.7	558
Paygrade (E-1 thru E-9)	4.0	1.4	357	4.1	1.6	560
Length of service (Years)	5.9	4.6	349	6.0	5.5	559
<hr/>						
	<u>%</u>			<u>%</u>		
Marital Status						
Single	51.2		167	42.3		234
Married	39.6		129	40.7		225
Divorced/Separated	9.2		30	17.0		94
Race/Ethnicity						
African-American	29.7		105	22.9		126
Asian	4.0		14	2.9		16
Hispanic	6.2		22	7.6		42
White	53.2		188	62.1		342
Other	6.8		24	4.5		25
Education						
4-year college graduate	7.6		26	8.1		45
Some college	37.9		130	52.0		288
High school graduate	51.9		178	38.6		214
GED	2.6		9	1.3		7

Participants aboard ships ranged in age from 18 to 47 years, and shore participants ranged in age from 18 to 45 years. Concerning marital status, a larger percentage of the women aboard ships were single (51.2%), a larger percentage of the women at shore stations were divorced (17.0%), and about the same percentage of both groups were married. Race distributions among the groups were similar with a higher percentage (29.7%) of African-American women aboard ships and a higher percentage (62.1%) of white women at shore stations. A larger percentage of the women at shore stations had attended college (60.1%). Between-groups t-tests were computed for mean age, paygrade, and years of service between the aboard ship and shore station groups and no significant differences were found.

Test Instruments

The reliability and validity of the instruments used to collect the data have been evaluated previously.²⁶ The following is a brief description of the instruments used in this study (see Appendix 1 for internal consistency estimates, Cronbach's alphas, for each of the measures described in the following paragraphs). Generally, the response options for the items were presented in a Likert scale that ranged from 1 to 7 (Very strongly agree to Very strongly disagree). The primary health care treatment site for most Navy people is sick-call, therefore, the participants were asked about only their

experiences at sick-call. The term "corpsman" is used within the Navy to refer to both enlisted females and males serving in jobs associated with health care. These corpsmen are the primary point-of-contact for many Navy people seeking health care at sick-calls aboard ships and at shore stations. Therefore, items in the instruments that contained the word "doctor" were modified to include the phrase "or corpsman," i.e., "The doctor (or corpsman)..."

Demographic and Medical History Questionnaire. This questionnaire was developed at NHRC and contains items related to the respondent's age, marital status, race, education, rank, years of military service, duty station, sick-call visits, and performance evaluations. This instrument contains 22 items.

Health Perceptions Questionnaire (HPQ).²⁸ The HPQ yields data related to subjective reports of physical health. The HPQ contains 29 items and was developed for use in evaluations of medical care, explaining health and illness behavior, studies of the relationships among health constructs, and population assessments of general health status. The HPQ contains six subscales, which measure perceptions of general health, current health, prior health, health outlook, resistance to illness, and health worry/concern. Items in the HPQ that contained the word "doctor" were modified to include the phrase "or corpsman," i.e., "The doctor (or corpsman) relieved my worries about my illness."

Mental Health Inventory (MHI).²⁸ The MHI is used as a general gauge of mental health or psychological functioning. The MHI contains 38 items and was developed to identify unmet needs for care, predict the use of mental and general health care services, and assess the psychological health of populations. Scores were computed for three subscales, anxiety, depression, and loss of self-control.

Medical Interview Satisfaction Scale (MISS).²⁹ The MISS was developed to measure the degree of satisfaction with a particular provider or consultation and to gain information concerning the content and technique of consultations. The MISS contains 29 items and yields a total scale score as well as four subscale scores, distress relief, communication comfort, rapport, and compliance intent. Items in the MISS that contained the word "doctor" were modified to include the phrase "or corpsman," e.g., "The doctor (or corpsman) came up with a good plan for helping me."

Client Satisfaction Questionnaire (CSQ).²⁶ The CSQ was developed as a measure of general satisfaction that could be used in various medical settings. The CSQ is used to gain patient evaluations of medical services; it consists of 18 items that are summed to compute a total CSQ score. Items in the CSQ were modified for use with the Navy population. For example, an original CSQ item states, "Did the characteristics of the building detract from the

services you have received?" This item was changed to read, "Did the characteristics of the building or ship detract from the services you have received at sick call?"

Procedure

The questionnaire for the women aboard ships was administered as part of a larger survey titled, "U.S. Navy Shipboard Health Survey." The present results are derived from data collected from the first 21 U.S. Navy ships contacted. A total of 60 ships will be asked to participate in this study. The availability of each ship to participate in the survey was determined by its commanding officer. Data collection on the ships began in June 1995 and concluded in October 1995. A trained team of proctors administered the survey to groups aboard each ship. Each survey included an attached Privacy Act Statement and an informed consent signature sheet that explained that participation was completely voluntary. The overall administration plan included the distribution to each participant of individually identified packets with all necessary materials. Whenever possible, participants were brought together in a common location aboard ship, briefed on the study, asked to sign informed consent, and asked to complete the survey while the study proctors were present. The surveys were distributed and the participants were allowed to fill them out in their work spaces when it was not practical to remain in one

area. Participants were asked to provide their names and social security numbers. The proctors collected the completed surveys in sealed envelopes. Participants were told that they could "leave blank any section or question that they did not want to answer" and that they were "free to stop at any time before completing the survey."

Questionnaires titled, "Health Care Survey," were mailed to the commanding officers of 42 randomly selected shore stations. The commanding officers were asked to distribute a copy of the questionnaire to all of the women assigned to the station. The questionnaire contained a cover sheet, Information to Participants Statement that explained that participation was completely voluntary, Privacy Act Statement, and a postage paid envelope. No personal identifiers were collected, and the participants were told that participation was completely voluntary, they could "leave blank any section or question that they did not want to answer," and that they were "free to stop at any time before completing the survey." Data collection at shore stations began in May, 1995 and concluded in November 1995.

Data Analysis

A post-test-only with nonequivalent comparison groups design was use in this study; participants were not randomly assigned to either the aboard ships or shore stations groups. It is important to note that in a quasi-experimental

study the independent variable may be confounded with a number of extraneous variables which make it difficult to determine whether any change in the dependent variable was due to variation of the independent variable.³⁰ However, as Campbell³¹ has stated, "...where randomized treatments are not possible, a self-critical use of quasi-experimental designs is advocated." The between-groups independent variable for the study was 3 months' service aboard a U.S. Navy ship. The dependent variables were the test score values, number of sick-call visits in the previous 3 months, and number of prescriptions in the previous 3 months. The data were scored using the standard procedures created by the instrument developers. A mean of the responses across the items for each subscale of each instrument was computed. Omnibus multivariate analyses of variance (MANOVAs) were used to compare the vectors of means across levels of the independent variable. MANOVA maintains an alpha level unaffected by the number of dependent variables and it avoids artificially inflated group differences due to intercorrelations among dependent variables.³² MANOVAs were followed by univariate independent sample t-tests which were used to test for significant between-groups differences.

Results

A series of t-test were computed to determine whether the aboard ship and shore station groups differed from each other in terms of the actual health care treatment they received. No significant differences were found between the groups for the self-reported number of visits to sick call or the number of prescriptions received at sick call in the 3 months prior to participating in the survey.

The following results will be presented within the framework of the 5 a priori directional hypotheses. To test the hypothesis that women serving aboard ships would be less satisfied with provided health care than would women at shore stations, a MANOVA was computed between the ship and shore groups using the two total satisfaction measure scores (CSQ and MISS) and the four subscales of the MISS. The MANOVA did not reach significance, $F [1,834] = 3.45, p = .064$, but there was a tendency for women aboard ships to have lower satisfaction scores than women at shore stations. Although the MANOVA was not significant at the .05 level it was thought prudent to explore the between-groups comparisons because the probability of rejecting the hypothesis that women are dissatisfied when they are in fact dissatisfied was considered to be too high, i.e., in this situation it is important not to make a Type II error.

Table 2 shows the means and standard deviations for the ship and shore groups for the total MISS scale score and the MISS subscales. A univariate independent samples t-test between the aboard ship and shore station groups for the total MISS scale score showed that the scores were lower for the aboard ship group, $t(855) = 2.07$, $p = .04$. Univariate independent samples t-tests between the aboard ship and shore station groups for the MISS subscales showed that women aboard ships had lower scores for Distress Relief, $t(855) = 1.96$, $p = .05$, and Rapport, $t(861) = 2.29$, $p = .02$.

Table 2

Means and Standard Deviations for the MISS Subscales and Total MISS Score for Women Aboard Ships and at Shore Stations*

<u>Subscale</u>	<u>Aboard Ships</u>			<u>Shore Stations</u>		
	<u>X</u>	<u>SD</u>	<u>N</u>	<u>X</u>	<u>SD</u>	<u>N</u>
Distress Relief	4.5**	1.6	323	4.7	1.5	534
Communication Comfort	5.1	1.3	325	5.2	1.3	536
Rapport	4.5***	1.6	328	4.7	1.5	536
Compliance Intent	5.1	1.4	320	5.2	1.3	533
Total Scale Score	4.6	1.4	323	4.8	1.3	534

* all values rounded to the tenth decimal place; ** $p=.05$, *** $p<.05$

Table 3 shows the means and standard deviations for the ship and shore groups for the CSQ. A univariate independent samples t-test computed between the aboard ship and shore groups found the total CSQ score was lower for the aboard ship group, $t(873) = 2.97$, $p = .003$.

Table 3

**Means and Standard Deviations for the Total CSQ Score for
Women Aboard Ships and at Shore Stations**

	<u>Aboard Ships</u>			<u>Shore Stations</u>		
	<u>X</u>	<u>SD</u>	<u>N</u>	<u>X</u>	<u>SD</u>	<u>N</u>
Total CSQ Score	2.74*	0.6	329	2.85	0.5	546

* $p < .05$

Hypotheses 2, 3, and 4 stated that shipboard women would describe their current general health less favorably, would report greater levels of health worry/concern, and would have lower scores on measures of perceived prior health and health outlook, respectively. These hypotheses were tested using HPQ subscale scores. A MANOVA was computed using the 6 HPQ subscale scores as dependent measures and no significant difference was found between the ship and shore groups, $F(1,890) = .11$, $p = .737$. Therefore hypotheses 2, 3, and 4 were not confirmed. Table 4 shows the means and standard deviations for the ship and shore groups for the HPQ subscale scores.

Table 4

**Means and Standard Deviations for the HPQ Subscales for Women Aboard
Ships and at Shore Stations**

<u>Subscale</u>	<u>Aboard Ships</u>			<u>Shore Stations</u>		
	<u>X</u>	<u>SD</u>	<u>N</u>	<u>X</u>	<u>SD</u>	<u>N</u>
General health	33.7	5.2	346	33.6	5.4	555
Current health	3.6	0.8	346	3.6	0.8	551
Prior health	3.7	0.9	346	3.8	1.0	551
Health outlook	3.7	0.7	346	3.7	0.7	549
Resistance to illness	3.5	0.9	346	3.6	0.9	551
Health worry/concern	2.8	0.7	346	2.9	0.7	546

$p > .05$ for all t-tests

The hypothesis that women aboard ships would report greater levels of negative psychological symptomatology, was tested with a MANOVA using the 3 MHI subscale scores as dependent measures. The MANOVA was significant, $F(1,891) = 10.57$, $p = .001$. Subsequent t-tests showed that the women aboard ships reported significantly more anxiety, $t[894] = 3.23$, $p = .001$, depression, $t[894] = 3.93$, $p = .001$, and less self-control, $t[898] = 2.37$,

$p = .02$, than did women at shore stations. Table 5 shows the means and standard deviations for the ship and shore groups for the MHI subscales.

Table 5

Means and Standard Deviations for the MHI Subscales for Women Aboard Ships and at Shore Stations

<u>Subscale</u>	<u>Aboard Ships</u>			<u>Shore Stations</u>		
	<u>X</u>	<u>SD</u>	<u>N</u>	<u>X</u>	<u>SD</u>	<u>N</u>
Anxiety	2.9*	1.0	348	2.7	1.0	548
Depression	3.1*	0.8	348	2.9	0.8	548
Self-control	4.7*	1.1	347	4.9	1.0	553

* $p < .05$

Discussion

The results of this study indicate that the majority of U.S. Navy women aboard ships and at shore stations are satisfied with their health care at sick call and that more than 80% perceive their health to be either "good" or "excellent." Conversely, a minority of Navy women were dissatisfied with the health care they received at sick call, and about 20% perceived their health to be either "poor" or "fair." Health care utilization, in terms of the number of sick-call visits and the number of prescriptions received, among women serving aboard ships was similar to that for women at shore stations. Although women aboard ships reported statistically significantly higher levels of distress (higher levels of anxiety and depression and lower levels of self-control), the clinical significance of this finding is not known. Finally, in this sample the women aboard ships tended not to be as satisfied with their overall health care or with their health care providers as women at shore stations. Despite the nonsignificant test result ($p=.064$), it is recommended that the hypothesis that women aboard ships are less satisfied than women at shore stations with their health care not be rejected before additional data are collected and analyzed.

The apparently lower levels of health care satisfaction among women aboard ships may be attributed to multiple factors, such as having limited health care options, using facilities modified for women but designed for men,

and a real or perceived lack of privacy in a self-contained environment (see Appendix 2). For example, in the area of health care options, more than 45% of both groups indicated they prefer to be seen by a female physician, while less than 18% of both groups indicated they prefer to be seen by a male physician at sick call (see Appendix 3). The results of the present study show that 21.1% of the women aboard ship are seen at sick call by a physician, while 70% are seen by a corpsman. At shore stations, 41.7% of the women are seen by a physician, while 34.9% are seen by a corpsman (see Appendix 4). Only 3 (12.5%) of the 21 ships surveyed had a female physician, and it is not known how many of the shore stations had a female physician available. Therefore, these results suggest that women aboard ships may not be as satisfied with their health care as women at shore stations because they cannot be seen by their preferred health care provider.²¹

Male physician and male corpsmen behavior during an examination or consultation may have contributed to the women aboard ships greater dissatisfaction with health care. Previous studies have shown that physician conduct accounted for 41% of the variance in general satisfaction ratings of provided health care²³; although the majority of women aboard ships (70%) were seen by corpsmen. Women aboard ships had lower scores on the Distress Relief and Rapport subscales of the MISS than did the women at shore stations

(see Table 2). No differences were found for the Communication Comfort or Compliance Intent subscales. Overall, these results suggest that most U.S. Navy women understood their health care providers' advice and believed they had communicated their problem to their health care provider. However, women aboard ships reported having established less of a trusting relationship with their health care provider and that their presenting problem had not been resolved as well as that of women at shore stations.

The finding of significantly higher levels of distress among women aboard ships would indicate that women aboard ships would have higher health care utilization rates and lower health status perceptions.^{3,5} However, no difference was found between the two groups for health care utilization rates or health status perceptions. A simple explanation of these findings may be that women aboard ships have higher levels of distress caused directly and indirectly by serving aboard a ship; however, their training, various Navy programs, and their intrinsic motivation may act to ameliorate the negative effects of distress on their health.

The MHI was used in this study to determine women's levels of anxiety, depression, and behavioral and emotional control. The MHI is not a clinical assessment tool but rather a measurement of psychological distress and well-being.²⁶ Ware and colleagues²⁸ developed the MHI to predict health care

utilization, identify unmet needs for health care, and assess the psychological health of populations. The results of the present study show that women aboard ships are more anxious and depressed; however, they do not seek health care at a higher rate than women at shore stations. Sick call aboard ships may not be the ideal environment to seek health care, especially for psychological problems, because of the real or perceived lack of privacy and confidentiality. In summary, the results of the MHI and the MISS show that women aboard ships have higher levels of distress than women at shore stations do and that their distress is not being relieved by their health care providers. However, the higher levels of distress are not reflected in higher rates of health care utilization or lower health status perceptions, and they do not necessarily reflect higher levels of clinical symptomatology.

The mixed results of the present study suggest that additional data need to be collected concerning patient satisfaction with health care and health care providers. Data need to be collected from male patients to determine whether the effect found in the present study is gender specific or simply related to service aboard ships. If the trend for patients aboard ships to be less satisfied with their health care at sick call than patients at shore stations is replicated, a determination should be made as to why patients aboard ships are less satisfied with their health care and if the levels of dissatisfaction are clinically

significant. The clinical significance of the finding of higher levels of distress among patients aboard ships should be further explored among both female and male patients. Finally, outcome programs should be developed to assess the effectiveness of modifications to shipboard health care facilities and services that have been initiated to accommodate women aboard ships.

The present study employed a quasi-experimental design; and therefore, the results should be interpreted with caution. With this design it is impossible to precisely evaluate the effect of the independent variables (service aboard a ship) on the dependent variables (e.g., perceptions of health status, health care, levels of distress). Uncontrolled factors may be responsible for the effects ascribed to the independent variable (factors that are not directly related to service aboard a ship). For instance, deployments that necessitate family separations may be partially responsible for the higher levels of distress found in women aboard ships.³³

References

1. Kanter RM: Some effects of proportions on group life: Skewed sex ratios and response to token women, *American Journal of Sociology* 1977; 82:965-990.
2. Thomas PJ: Women in the military: Gender integration at sea. (NPRDC Technical Note 81-13). San Diego, CA: Naval Personnel Research and Development Center.
3. Mechanic D: Effects of psychological distress on perceptions of physical health and use of medical and psychiatric facilities, *J Human Stress* 1978; 4:26-32.
4. Reppetti RL: Short-term effects of occupational stressors on daily mood and health complaints, *Health Psychol* 1993; 12:125-131.
5. Sorensen G, Verbrugge LM: Women, work, and health, *Annu Rev Public Health* 1987; 8:235-251.
6. Hardin KN, Hailey BJ: Health care professionals' perceptions of seriously ill women, *Health Care Women Int* 1993; 14:7-16.
7. DiMatteo MR, Sherbourne CD, Hays RD, Ordway L, Kravitz RL, McGlynn Kaplan S, Rogers WH: Physician's characteristics influence patients' adherence to medical treatment: Results from the Medical Outcome Study, *Health Psychol* 1993; 12:93-102.

8. Verbrugge L, Wingard D: Sex differentials in health and mortality, *Women Health* 1987; 12:103-145.
9. Nice DS, Hilton S: Sex differences and occupational influences on health care utilization aboard U.S. Navy ships. *Military Psychology* 1994; 6:109-123.
10. Hing E, Kovar M, Rice D: Sex differences in health and use of medical care, *Vit Health Stat* 1983; 3:DHHS No. 83-1408. Hyattsville, MD: National Center for Health Statistics.
11. Verbrugge L: Gender and health: An update on hypotheses and evidence, *J Health Social Behav* 1985; 26:156-182.
12. Verbrugge L: The twain meet: Empirical explanations of sex differences in health and mortality, *J Health Social Behav* 1989; 30:282-304.
13. Waldron I: An analysis of causes of sex differences in mortality and morbidity, In W.R. Gove and G.R. Carpenter (Eds.), *The Fundamental Connection Between Nature and Nurture*, Lexington, MA:Lexington Books, 1982.
14. Levy SM, Herberman RB, Whiteside T, Sanzo K, Lee J, Kirkwood J: Perceived social support and tumor estrogen/progesterone receptor status as predictors of natural killer cell activity in breast cancer patients, *Psychosom Med* 1990; 52:73-85.

15. Connelly JE, Philbrick JT, Smith GR, Kaiser DL, Wymer A: Health perceptions of primary care patients and the influence on health care utilization, *Med Care* 1989; 27(3 Supp): S99-S109.
16. Connelly JE, Smith GR, Philbrick JT, Kaiser DL: Healthy patients who perceive poor health and their use of primary care services, *J Gen Intern Med* 1991; 6:57-51.
17. Macintyre S: (1993). Gender differences in the perceptions of common cold symptoms, *Soc Sci Med* 1993; 36:15-20.
18. Nice DS, Hilton S: Sex differences in health care requirements aboard U.S. Navy ships. (NHRC Report No. 90-2). San Diego, CA: Naval Health Research Center, 1990.
19. LeBaron S, Reyherm J, Stack J: Paternalistic vs egalitarian styles: The treatment of patients in crisis, *J Fam Pract* 1985; 21:56-62.
20. Kaplan SH, Greenfield S, Ware JE: Assessing the effects of physician-patient interactions on the outcomes of chronic diseases, *Med Care* 1989; 27(3 Suppl):S110-27.
21. Larsen DE, Rootman I: Physician role performance and patient satisfaction, *Soc Sci Med* 1976; 10:29-32.
22. Carey CG, Posavac EJ: Using patient information to identify areas for service improvement, *Health Care Manage Rev* 1982; 7:43-48.

23. Doyle BJ, Ware JE: Physician conduct and other factors that affect consumer satisfaction with medical care, *J Med Educ* 1977; 2:793-801.
24. Ware JE, Davies-Avery R, Stewart AL: The measurement and meaning of patient satisfaction, *Health and Medical Care Services Research*, 1978; 1:1-15.
25. Brody DS, Miller SM, Lerman CE, Smith DG, Lazaro CG, Blum MJ: The relationship between patients' satisfaction with their physicians and perceptions about interventions they desired and received, *Med Care* 1989; 27:1027-1035.
26. Wilkin D, Hallam L, Doggett M: (Eds.) *Measures of Need and Outcome for Primary Health Care*. New York, NY: Oxford University Press.
27. Ware JE: Scales for measuring general health perceptions. *Health Serv Res* 1976; 11:396-415.
28. Ware JE, Johnston SA, Davies-Avery A, Brook RH: Conceptualization and measurement of health for adults in the Health Insurance Study: Vol III, Mental Health, Rand Publication No. R-1987/3-HEWW. Santa Monica, CA: Rand Corporation, 1979.
29. Wolf MH, Stiles WB: Medical Interview Satisfaction Scale, In D. Wilkin, L. Hallam, and M. Doggett (Eds.), *Measures of Need and Outcome for Primary Health Care*. New York, NY: Oxford University Press, 1981.
30. McGuigan FJ: *Experimental psychology: Methods of research*, Englewood Cliffs, NJ: Prentice Hall, 1990.

31. Campbell DT: Reforms as experiments, *Am Psychol* 1969; 24:409-429.
32. Weinfurt KP: Multivariate analysis of variance, In L. Grimm and P. Yarnold (Eds.), *Reading and Understanding Multivariate Statistics*. Washington, DC: American Psychological Association, 1995.
33. Burr RG, Palinkas LA, Banta GR: Psychological effects of sustained shipboard operations on U.S. Navy personnel, *Current Psychology* 1993; 12:113-129.

Appendix 1

Internal Consistency Estimates (Cronbach's Alphas) for the
Scales and Subscales for Women Aboard Ships and at Shore
Stations

<u>Variable</u>	<u>Aboard ships</u>	<u>Shore Stations</u>
Client Satisfaction Questionnaire		
Total score	.92	.94
Medical Interview Satisfaction Scale		
Total score	.96	.96
Distress relief	.95	.95
Communication comfort	.67	.69
Rapport	.92	.93
Compliance intent	.76	.69
Current health	.86	.88
Prior health	.40	.54
Health outlook	.72	.76
Resistance to illness	.76	.81
Health worry/concern	.60	.66
Sickness orientation	.46	.59
Mental Health Inventory		
Anxiety	.93	.93
Depression	.89	.90
Self control	.77	.80

Appendix 2

Selected Items from the Client Satisfaction Questionnaire

<u>Item</u>	<u>Option</u>	<u>Aboard Ship</u>		<u>Shore</u>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
How would you rate the quality of the service you have received at sick call?					
	Poor	48	7.9	46	8.4
	Fair	130	38.0	159	29.2
	Good	125	39.5	262	48.1
	Excellent	26	14.6	78	14.3
In an overall, general sense, how satisfied are you with the service you have received at sick call?					
	Quite dissatisfied	21	6.4	33	6.0
	Indifferent or mildly dissatisfied	102	31.3	137	25.1
	Mostly satisfied	163	50.0	300	54.9
	Very satisfied	40	12.3	76	13.9
To what extent has the Navy's Health care program (at sick call) met your needs?					
	None of my needs have been met	7	2.1	9	1.7
	Only a few of my needs have been met	122	37.1	160	29.5
	Most of my needs have been met	157	47.7	286	52.7
	Almost all of my needs have been met	43	13.1	88	16.2
If you were to seek help again (and had a choice), would you go back to sick call?					
	No, definitely not	35	10.7	37	6.8
	No, I don't think so	95	29.0	132	24.3
	Yes, I think so	156	47.6	275	50.6
	Yes, definitely	42	12.8	99	18.2

Appendix 3

Health-Care Provider Preferences of Women Aboard

Ships and at Shore Stations

	<u>Aboard Ships</u>		<u>Shore Stations</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Female Physician	148	45.5	261	48.5
Male Physician	58	17.8	85	15.8
Female Corpsman	51	15.7	22	4.1
Male Corpsman	4	1.2	10	1.8
Other	64	19.7	15	2.8
No Preference	*	*	99	18.4
Physician Either Sex	*	*	41	7.6
More Than 1 Choice	*	*	5	0.9

Appendix 4

Health-Care Providers for Women Aboard Ships and at
Shore Stations

<u>Provider</u>	<u>Aboard Ships</u>		<u>Shore Stations</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Physician	74	21.1	221	41.7
Physician's Assistant	26	7.4	106	20.0
Corpsman	245	70.0	185	34.9
Other	5	1.4	18	3.4

Appendix 5

Health Care Satisfaction Among U.S. Navy Personnel Aboard Ships

Accepted for presentation at the Thirty-seventh Navy Occupational Health and Preventive Medicine Convention, March 23, 1996 in Virginia Beach, Virginia.

Ralph G. Burr, Lex L. Merrill, Kristee Emens-Hesslink

Naval Health Research Center, San Diego, CA

Abstract

The number of U.S. Navy women being assigned to ships is steadily increasing; currently approximately 9,000 women serve on 96 different ships. Previous research comparing Navy women stationed on ships to shore based women showed that women on ships reported significantly less satisfaction with provided health care. The purpose of the present study was to compare shipboard women (N = 364) to shipboard men (N = 370) on a number of measures of perceived health and health care satisfaction. Questionnaires were administered aboard 21 ships; instruments included were the Mental Health Inventory (MHI), the Client Satisfaction Questionnaire (CSQ), the Health Perceptions Questionnaire (HPQ), and the Medical Interview Satisfaction Scale (MISS). MANOVA and subsequent independent group t-tests were used for

determining statistically significant differences. Results showed no difference between the groups on several measures of prior and current general health. Women were significantly less satisfied with provided health care, and, had significantly higher levels of distress, anxiety, and depression. These male-female differences are consistent with previous findings described in the open literature and are not unique to this shipboard study. Suggestions compiled from the written comments of women in this study are: sensitivity training for medical personnel, increase the number of female medical personnel, update ships' medical facilities and supplies to accommodate the increasing number of women assigned to ships.

Appendix 6

U.S. Navy Women's Satisfaction with Provided Health Care

Accepted for presentation at the 104th Meeting of the American Psychological Association, August 9, 1996 in Toronto, Ontario, Canada.

Ralph G. Burr, Lex L. Merrill, Kristee Emens-Hesslink

Naval Health Research Center

Abstract

About 55,000 of the 443,600 active duty U.S. Navy personnel are women; approximately 9,000 of these women are assigned to ships. Research has shown that being a member of a minority group leads to stress, stress is associated with illness, and illness requires health care. The purpose of this study was to assess U.S. Navy women's perceptions of the quality of the health care provided by the Navy. Comparisons were made between women stationed on ships ($N = 364$) and women who were working at shore stations ($N = 639$). Questionnaires were administered aboard 21 ships and mailed to 42 randomly selected shore units. Instruments included were the Mental Health Inventory (MHI), the Client Satisfaction Questionnaire (CSQ), the Health Perceptions Questionnaire (HPQ), and the Medical Interview Satisfaction Scale (MISS). It

was hypothesized that women serving aboard ships would describe their current general health less favorably, would be less satisfied with provided health care, and would report greater levels of distress, anxiety and depression than women serving at shore stations. MANOVA and subsequent independent group t-tests were used for determining statistically significant differences. Results showed no difference between the groups on several measures of current general health. Women on ships were significantly less satisfied with provided health care, and, had significantly higher levels of distress, anxiety, and depression. The subjective assessment of the quality of health care is not the definitive measure of the Navy's health care system, however, patient satisfaction is and must be a legitimate goal for medical care. Dissatisfaction is associated with non-compliance with treatment instructions and delay in seeking further care. Possible solutions based on the written comments of shipboard women in this study are: sensitivity training for medical personnel, increase the number of female medical personnel, update ships' medical facilities and supplies to accommodate the increasing number of women assigned to ships.

Appendix 7

Personnel Receiving Pay from the Contract Support

<u>Name/Grade/Degree</u>	<u>Status</u>
1. Lex L. Merrill, GS-12, Ph.D.	Principal Investigator
2. Ralph G. Burr, GS-12, M.A.	Associate Investigator
3. Tamsin L. Kelly, GS-13, M.D., J.D.	Associate Investigator
4. Kristee Emens-Hesslink, B.A.	Contractor